

# Polar Front Migration

# Polar Front Migration

## FALL

# General Description

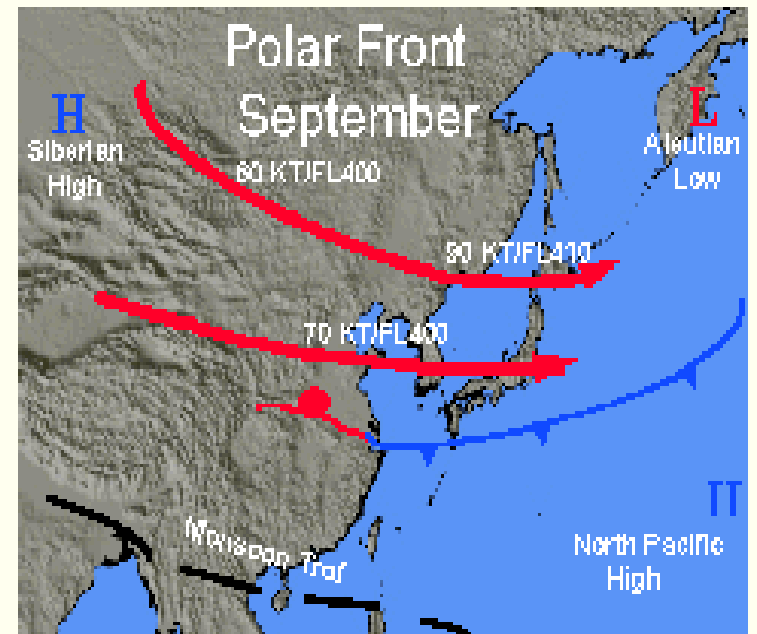
- The Asiatic Low begins to weaken and the Siberian high strengthens causing the northwest monsoon
- The polar front begins to move south again, moving through Korea by late September into early October
- This southward migration is called the Shurin
- The upper-air pattern becomes high zonal, with the jet streams strengthening and are split
- By the end of Fall the upper-air pattern establishes its winter pattern of converging jet streams over Japan

# General Description (Cont.)

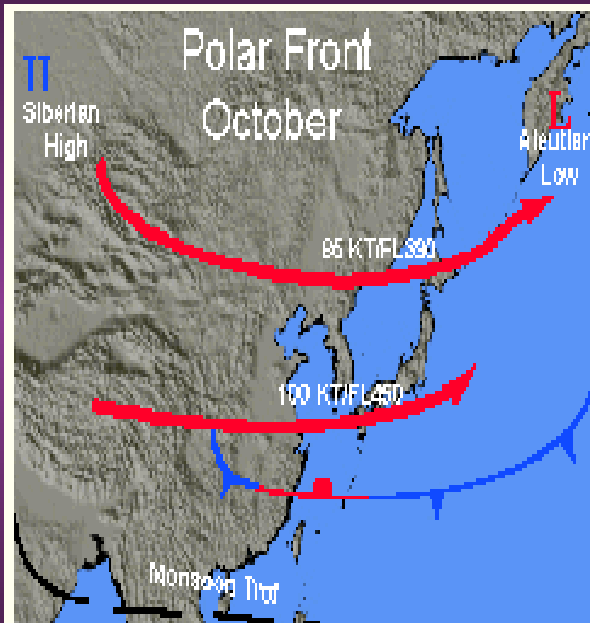
- The jet stream begins to intensify but remains over northern Japan. Two branches become evident: A northern branch extending from Vladivostok to southern Hokkaido at 40,000 feet with wind speeds of 60 to 90 knots and, a southern branch which flows across Korea eastward into the Tokyo area at 40,000 feet with winds of 70 knots.
- By October, the northern branch dips southward and extends from northern Korea in to southern Hokkaido at 39,000 feet with wind speeds of 85 knots. The southern branch extends from the Shanghai area into southern Honshu at 45,000 feet with wind speeds of 100 knots.

## *Typical Polar front Position for September*

The Asiatic low begins to weaken and consequently, the Siberian high restrengthens. The polar front starts to move south again, moving through most stations for good by late September. The upper-air pattern becomes more high zonal. Jet streams strengthen and are split.



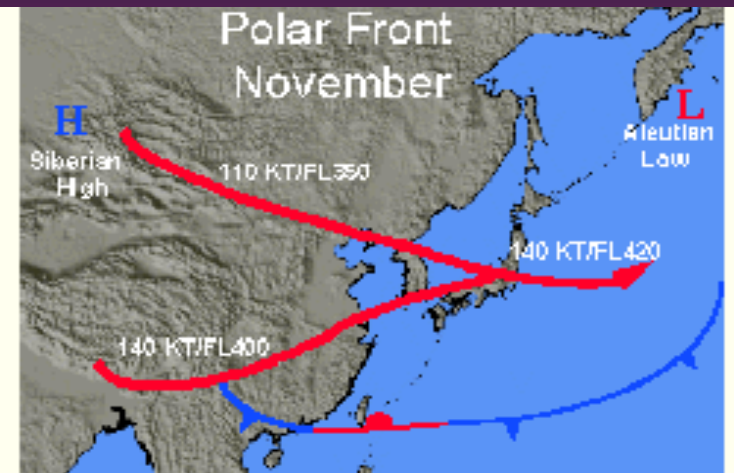
## *Typical Polar front Position for October*



The polar front moves south of all locations by early October. Migratory lows increase in frequency bringing cooler temperatures and occasional low ceilings and visibility. Fropas have a 4-6-day cycle, and excellent autumn weather generally prevails for 2-3 days after a fropa. The upper air pattern is zonal with split jet streams.

## *Typical Polar front Position for November*

The polar front moves farther southward. The strengthening Siberian high causes the northwest monsoon. Migratory lows increase in frequency bringing cooler temperatures and occasional low ceilings and visibility. Fropas are reduced to a 2-4-day cycle. Autumn fropas are usually brief with fair weather prevailing 2-3 days after passage. Typhoons or tropical storms are no longer threats to most of the region. The upper-air pattern establishes its winter pattern--converging jet streams over Japan.



# Weather Trends

- Conditions are usually cooler and drier than the summer, with some morning fog
- Less rainfall occurs than with the summertime position of the Polar Front
- The prevailing wind direction changes from south-southwesterly to northerly during the Shurin. During October, this trend continues, with southerly winds occurring less than 10% of the time. Afternoon heating normally results in a short duration sea breeze with a return to northerly winds after sunset.

# Weather Trends

- Northerly winds average 9 to 10 knots during the Autumn season.
- Migratory lows increase in frequency bringing cooler temperatures and occasional low ceilings and visibility
- Frontal passage during early autumn have a 4-6 day cycle, but is reduced to 2-4 days later in the season
- Autumn frontal passage are usually brief and excellent autumn weather generally prevails for 2-3 days after fropa
- Typhoons or tropical storms are no longer

## *Fall Freezing Levels for the Far East*

### Freezing Level Table

This table shows the average freezing level by month for the Far East region.

Areas: (1) *Northern ROK*, (2) *Central ROK*, (3) *Southern ROK*, (4) *Northern Japan*, (5) *Southern Japan*, (6) *Okinawa*.

Freezing levels are in ft

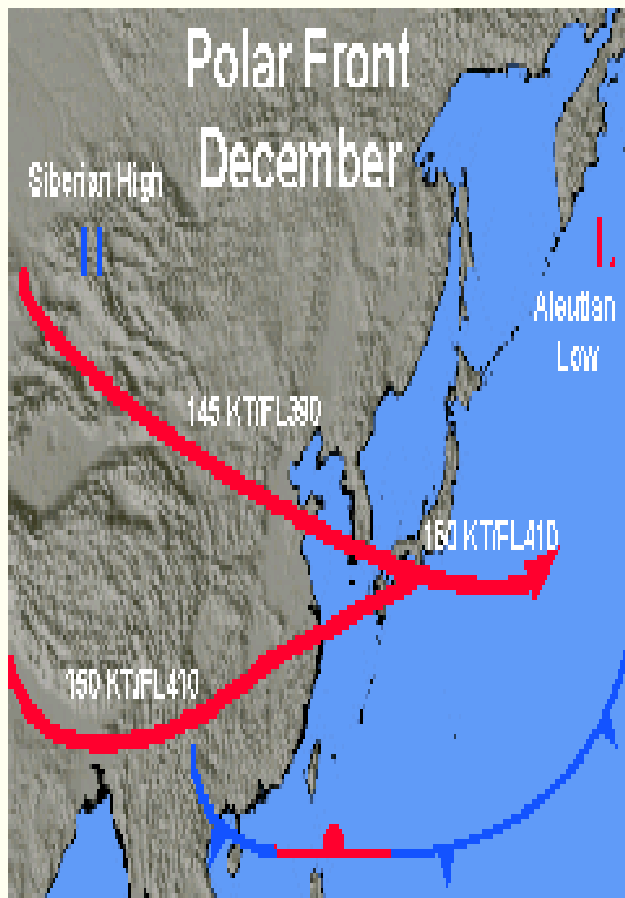
Month	(1)	(2)	(3)	(4)	(5)	(6)
January	Sfc	500	1,000	Sfc	2,000	9,000
February	500	1,000	2,000	Sfc	2,000	9,000
March	3,500	4,000	5,000	1,000	4,000	10,000
April	7,000	7,000	7,500	5,000	7,500	12,500
May	10,500	11,000	11,000	9,000	11,000	14,500
June	13,000	13,000	13,500	12,000	13,000	15,000
July	15,500	15,500	15,500	14,500	15,000	16,000
August	15,000	15,000	15,000	14,500	15,000	16,500
September	13,000	13,000	14,000	12,500	14,000	15,500
October	10,500	10,500	11,000	9,000	11,000	14,000
November	5,500	6,000	7,000	4,000	8,000	13,000
December	1,500	2,000	3,500	1,000	3,500	11,000

# Polar Front Migration WINTER

# General Description

- The region is under the influence of cP air from the Siberian high, the northeast monsoon
- The primary polar front is in its most southern position
- The upper-air pattern becomes more zonal
- The jet streams converge over southern Japan
- The two main branches of the jet stream merge into a main core immediately to the west of Japan. The northern branch fluctuates in intensity and position, while the southern branch remains relatively stable. At the junction of the two jet branches, daily variations in wind speed are considerable with winds of 150 to 200 knots between 25,000 and 40,000 feet is common.

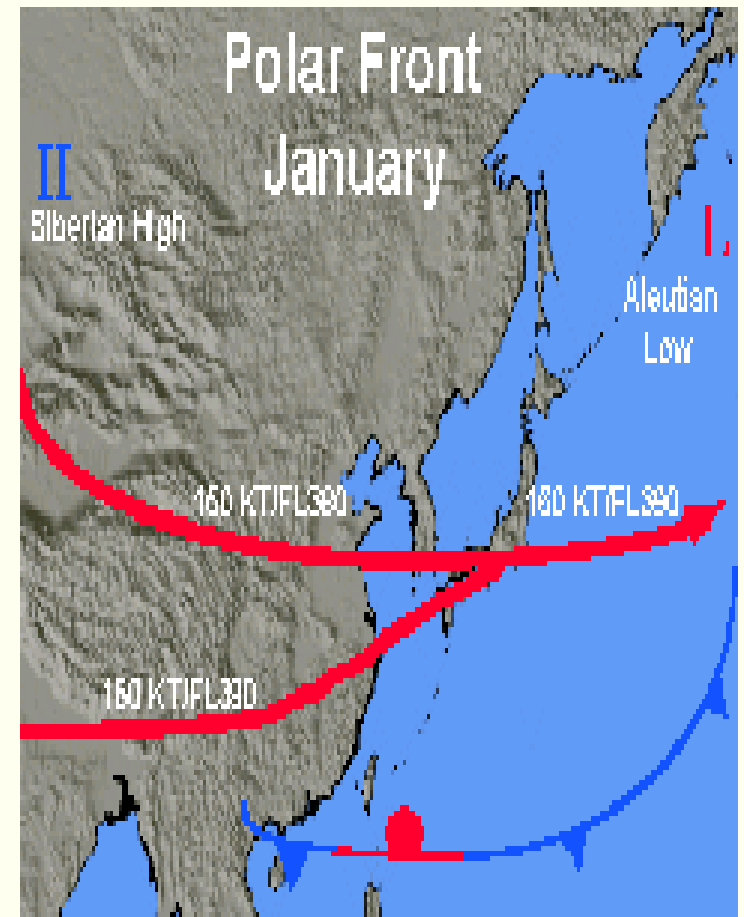
## *Typical Polar front Position for December*



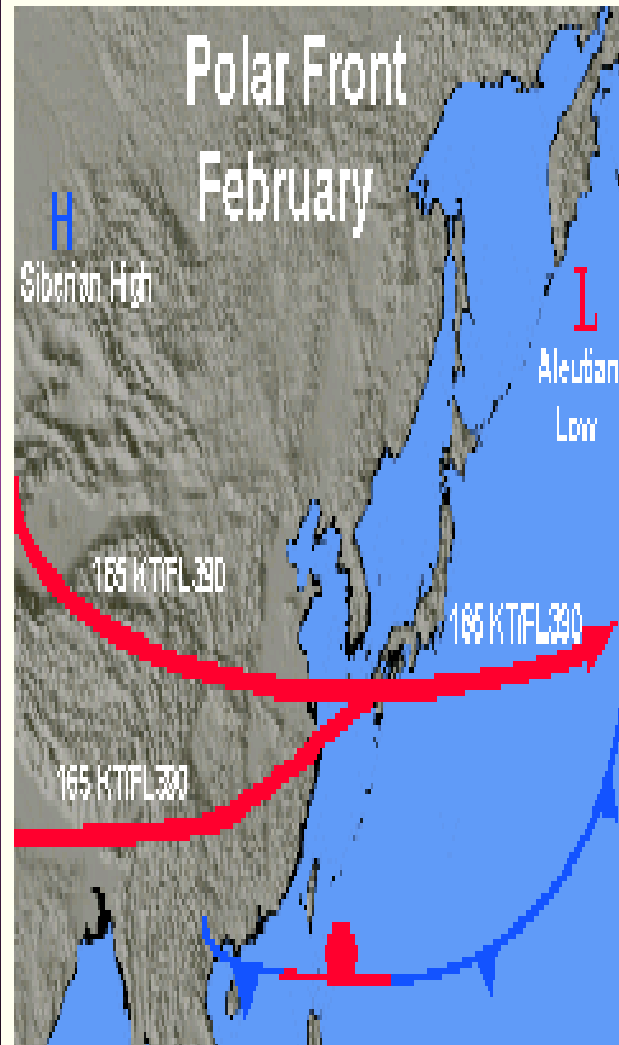
The region is under the influence of cP air from the Siberian high, the northwest monsoon. The primary polar front stays mainly south of the region. Taiwan lows or occasional Shanghai lows affect Okinawa and southern Japan. Migratory lows and trailing cold fronts usher in fresh shots of cP or arctic air. The upper-air pattern is high zonal with converging jets south of Japan.

## *Typical Polar front Position for January*

The region is still under the influence of cP air from the Siberian high, the northwest monsoon. The primary polar front is in its most southern position. Taiwan lows affect Okinawa and occasionally southern Japan. Migratory lows and trailing cold fronts usher in fresh shots of cP or arctic air. The upper-air pattern becomes more zonal. The jet streams converge over southern Japan.



## *Typical Polar front Position for February*



The region remains under the influence of cP air from the Siberian high, the northwest monsoon. The primary polar front remains well south. Taiwan lows affect Okinawa and occasionally southern Japan. Migratory lows and trailing cold fronts usher in fresh shots of cP or arctic air. The upper-air pattern remains zonal. The jet streams converge just south of southern Japan.

# Weather Trends

- Conditions are generally clear and cold
- Occasional upper-level troughs in Siberia steer some of the cP air to the southeast causing migratory systems which bring rain or snow
- Stations with large bodies of water nearby to the north and west frequently experience lake-effect instability showers in NW-N winds after migratory system passage. These showers frequently reduce ceilings and visibility to near zero in snow.
- Lastly, freezing levels are at there lowest

## Winter Freezing Levels for the Far East

### Freezing Level Table

This table shows the average freezing level by month for the Far East region.

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Freezing levels are in ft

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??QUESTIONS??